



Substitute for form 1449A-B/PTO
**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Complete if Known

Application Number	09/494,282
Filing Date	January 18, 2000
First Named Inventor	Sergey A. Selifonov
Group Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	02-028930US

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, lines, Where Relevant Passages or Relevant Figures Appeal
		Number	Kind Code (if known)			

FOREIGN PATENT DOCUMENTS

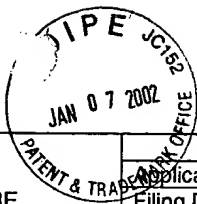
Examiner Initials	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
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OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
AA	AA	STEMMER (1994) DNA shuffling by random fragmentation and reassembly: In vitro recombination for molecular evolution" <i>Proc. Natl. Acad. Sci. USA</i> vol. 91, pp 10747-10751	
AB	AB	VENKATASUBRAMANIAN et al., (1995) "Evolutionary Design of Molecules with Desired Properties Using the Genetic Algorithm" <i>J. Chem. Inf. Comput. Sci.</i> vol. 35 pp. 188-195	
AC	AC	SINGH et al., (1996) "Application of Genetic Algorithms to Combinatorial Synthesis: A Computational Approach to Lead Identification and Lead Optimization" <i>J. Chem. Inf. Comput. Sci.</i> vol. 118 pp 1669-1676	
AD	AD	HARAYAMA, SHIGEAKI, (1998) "Artificial evolution by DNA shuffling" <i>Tibtech</i> vol. 16 pp 76-82	
AE	AE	ZHANG, CHING (1994) "A Genetic Algorithm for Molecular Sequence Comparison" <i>Proceedings of the International Conference on Systems, Man, and Cybernetics</i> pp 1926-1931	

Examiner Signature		Date Considered	1/25/03
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



(Modified) PTO/SB/08A-B (10-96)
Approved for use through 10/31/99. OMB 0651-0031

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Application Number **09/494,282**
Filing Date **January 18, 2000**
First Named Inventor **Sergey A. Selifonov**
Group Art Unit **1631**
Examiner Name **Zhou S.**
Attorney Docket Number **02-028930US**

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code (if known)			
<i>A</i>	AA	5,023,171		Ho et al.	06-11-1991	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		Office	Number	Kind Code (if known)				
<i>A</i>	AB	WO	91/06643	A1	Majesty (Her) In Right of Canada	05-16-1991		
<i>A</i>	AC	WO	96/16073	A2	Terrapin Technologies, Inc.	05-30-1996		
<i>A</i>	AD	WO	96/16073	A3	Terrapin Technologies, Inc.	05-30-1996		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T
<i>A</i>	AE	Dewey et al. (1998) "Non-equilibrium Thermodynamics of Molecular Evolution." <i>J. Theor Biol.</i> 193:593-599	
<i>A</i>	AF	Morchio et al. (1997) "Simulation of Protein Evolution: Evidence for a Non-linear Aminoacidic Substitution Rate." <i>Riv Biol</i> 83-94	

Examiner Signature	<i>Sh Zhou</i>	Date Considered	<i>1/25/03</i>
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Group Art Unit	1631
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		Number	Kind Code (if known)			

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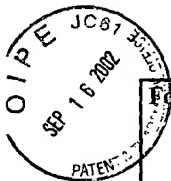
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. <i>is</i>	AA	DIATCHENKO ET AL. (1996) "Suppression subtractive hybridization: A method for generating different regulated or tissue-specific cDNA probes and libraries." PNAS USA 93:6025-6030	
. <i>is</i>	AB	SHAO ET AL. (1998) "Random-priming in vitro recombination: an effective tool for directed evolution." <i>Nucleic Acids Research</i> 26(2):681-683	

Examiner Signature	<i>Sh Zhou</i>	Date Considered	1/25/03
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Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. MXGNP001X1 Applicant: Selifonov et al. Filing Date January 18, 2000	Application No.: 09/494,282 Gross 1635
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U.S. Patent Documents

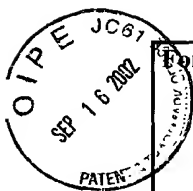
Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
AB	A1	6,125,331	9/26/00	Toh			
AB	A2	6,403,312	6/11/02	Bassil, et al			
	A3						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
AB	B1	WO00/47612	8/17/00	WIPO				
	B2	WO01/61344	8/23/01	WIPO				
	B3	WO00/42559	7/2/00	WIPO				
AB	B4	WO01/75767	10/11/01	WIPO				

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AB	C1	Dahiyat and Mayo, "Protein Design Automation," Protein Science, 5:895-903, (1996)
	C2	Su et al., "Coupling Backbone Flexibility and Amino Acid Sequence Selection in Protein Design," Protein Science, 6:1701-1707, (1997)
	C3	Voigt et al., "Computationally Focusing the Directed Evolution of Proteins," Journal of Cellular Biochemistry Supplement, 37:58-63 (2001)
AB	C4	Hellberg et al., "Minimum Analogue Peptide Sets (MAPS) for quantitative Structure-Activity Relationships," Int. J. Peptide Protein Res. 37:414-427 (1991)

**Form 1449 (Modified)****Information Disclosure
Statement By Applicant**

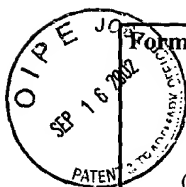
(Use Several Sheets if Necessary)

Atty Docket No.
MXGNP001X1Applicant:
Selifonov et al.Filing Date
January 18, 2000Application No.:
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<i>AB</i>	C5	Martin van Heel, "A New Family of Powerful Multivariate Statistical Sequence Analysis Techniques," J. Mol. Biol, 220:877-887 (1991)
	C6	Goldman et al., "Estimating Protein Function From Combinatorial Sequence Data Using Decision Algorithms and Neural Networks," Drug Dev. Research 33:125-132 (1994)
	C7	Gustafsson et al., "Exploration of Sequence Space for Protein Engineering," J. Mol. Recognit. 14:308-314 (2001)
	C8	Miyazawa et al., "Residue-Residue Potentials with a Favorable Contact Pair Term and an Unfavorable High Packing Density Term, for Simulation and Threading," J. Mol. Biol., 256:623-644 (1996)
	C9	Chao Zhang, "Extracting Contact Energies From Protein Structures: A Study Using a Simplified Model," Proteins: Structure, Function, and Genetics, 31:299-308 (1998)
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	C11	Miyazawa et al., "An Empirical Energy Potential With a References State for Protein Fold and Sequence Recognition," Proteins: Structure, Function, and Genetics, 36:357-369 (1999)
	C12	Moore et al., "Predicting Crossover Generation in DNS Shuffling," PNAS, Vol. 98, No. 6, 3226-3231 (2001)
	C13	Lehman et al., "Engineering Proteins for Thermostability: the Use of Sequence Alignments Versus Rational Design and Directed Evolution," Current Opinion in Biotechnology, 13:371-375 (2001)
	C14	Colleen Kelly, "A Test of the Markovian Model of DNA Evolution," Biometrics 50, 653-664, (1994)
	C15	H.W. Hellenga, "Rational Protein Design: Combining Theory and Experiment," Proc. Natl. Acad. Sci. USA, Vol. 94, pp. 10015-10017, (1997)
<i>W</i>	C16	William F. DeGrado, "Proteins from Scratch," Science, Vol. 278, 80-81 (1997)



Form 1449 (Modified)

**Information Disclosure
Statement By Applicant**

(Use Several Sheets if Necessary)

Atty Docket No.

MXGNP001X1

Applicant:

Selifonov et al.

Filing Date

January 18, 2000

Application No.

09/494,282

Group

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<input checked="" type="checkbox"/>	C17	Jonsson, et al, "Quaintitative Sequence-Activity Modeils (QSAM)- Tool For Sequence Design", Nuclear Acid Research Vol. 21, No. 3, pp. 733-739 (1993)
<input type="checkbox"/>	C18	Sjostrom, et al, "Signal Peptide Amino Acid Sequences In <i>Escheruchua coli</i> Contain Information Related To Final Protein Localization. A Multivariate Data Analysis", The CMBO Journal vol. 6, no. 3, pp 823-831, (1987)
<input type="checkbox"/>	C19	Patel, et al, "Patenting Computer-Designed Peptides", Journal Of Computer-Acid Molecular Design 12 pp543-556, (1998)
<input type="checkbox"/>	C20	Schneider, et al, "Peptide Design by Artificial Neural Networks and Computer-Based Evolutionary Search", Proc. Natl. Acad. Sci. USA, vol. 95, pp. 12179-121184, October 1998
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<input type="checkbox"/>	C22	Bogarad, et al, "A Hierarchical Approach to Protein Molecular Evolution", Proc. Natl. Acad. Sci. USA, Vol. 96, pp. 2597-2595, March 1999
<input checked="" type="checkbox"/>	C23	Darius, et al, "Simulated Molecular Evolution" Or Computer-Generated Artifacts?", Biophysical Journal, Vol. 67, pp. 2120-2122, November 1994
Examiner		Date Considered
		1/25/03

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified)	Atty Docket No. MXGNP001X1	Application No.: 09/494,282
Information Disclosure Statement By Applicant	Applicant: Selifonov et al.	
(Use Several Sheets if Necessary)	Filing Date January 18, 2000	Group 1635

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub- class	Filing Date
✓	A1	6,455,254	9/24/02	Short			
	A2						
	A3						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub- class	Translation	
							Yes	No
	B1							
	B2							
	B3							
	B4							

Other Documents

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Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C1	
	C2	
	C3	
	C4	
Examiner <i>S. L. Shon</i>	Date Considered <i>1/25/03</i>	

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Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. MXGNP001X1/0124.410US	Application No.: 09/494,282
	Applicant: Selifonov et al. Filing Date January 18, 2000	Group 1631

U.S. Patent Documents

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	A1						
	A2						
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Foreign Patent or Published Foreign Patent Application

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							Yes	No
	B1							
	B2							
	B3							
	B4							
	B5							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>No publication date</i> ✓	C1	Moore et al., <u>Modeling and Optimization of DNA Recombination</u> , Computer and Chemical Engineering 2000, Department of Chemical Engineering, The Pennsylvania State University, University Park © 2000
✓	C2	Gregory L. Moore, Costas D. Maranas, <u>Modeling DNA Mutation and Recombination for Directed Evolution Experiments</u> , Department of Chemical Engineering, The Pennsylvania State University, University Park, Received 28, October 1999, Accepted in revised form 15 April 2000 © 2000 Academic Press
Examiner <i>Shihon</i>	Date Considered <i>1/20/03</i>	

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